with the condition $(ad-bc)^2=1$; for, considering the group G:

$$x_1'=a^2x_1+2abx_2+b^2x_3,$$
$$x_2'=acx_1+(ad+bc)x_2+bdx_3,$$
$$x_3'=c^2x_1+2cdx_2+d^2x_3,$$

it is easily seen that $x_2'^2-x_1'x_3'=(ad-bc)^2(x_2^2-x_1x_3)$.

But is $x_2^2-x_1x_3=0$, the condition $(ad-bc)^2=1$ may be removed, thus obtaining a group of *four* parameters.

PROBLEMS FOR SOLUTION.

ALGEBRA.

205. Proposed by G. B.M. ZERR, A. M., Ph. D., Parsons, W. Va.

Express in the form of radicals the roots of the equation:

$$x^{15}+15mx^{13}+90m^2x^{11}+275m^3x^9+450m^4x^7+378m^5x^5+140m^6x^3+15m^7x+2r=0.$$

206. Proposed by L. E. NEWCOMB, Los Gatos, Cal.

The product of a certain pair of roots of $x^4+ax^3+bx^2+amx+m^2=0$, is equal to the product of the remaining pair.

207. Proposed by A. J. PAULSEN, San Francisco, Cal.

Solve $x^4+y^4=2x^2y^2$; $x+y=a$.

GEOMETRY.

233. Proposed by S. F. NORRIS, Professor of Mathematics, Baltimore City College, Baltimore, Md.

If from any point on a circle circumscribed about a triangle perpendiculars are dropped to the sides of the triangle, the feet of these perpendiculars lie on a line. [Ashton's *Plane and Solid Analytic Geometry*, page 87, 11th example].

234. Proposed by M. E. GRABER, A. B., Instructor in Mathematics and Physics in Heidelberg University, Tiffin, Ohio.

Find the curve which is reciprocal to a circle and define it as a locus.

235. Proposed by W. J. GREENSTREET, A. M., Editor of The Mathematical Gazette, Stroud, England.

Any point on an ellipse is joined to the corners of an inscribed square. Find the anharmonic ratios of the pencil so formed.

CALCULUS.

181. Proposed by S. F. NORRIS, Baltimore, Md.

Integrate $dy=\frac{x^2dx}{1+x^4}$. [From Olney's *Integral Calculus*, page 116, third example, second part].